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Water always finds its way: Identifying new forms of money laundering

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Abstract Money laundering regulations have become stricter over time and involve more and more actors. This means that the accountability of laundering regulation will become more important; theoretically, money laundering should have decreased with the implementation of new regulations. However, as this paper shows, it is difficult to estimate even the sign of the trend in the proceeds of crime and of laundering over time with particular reference to the drug trade. There seems to be a substitution from hard to softer drugs, and no substantial decline in the proceeds of crime and likewise no substantial decline in money laundering. Criminals seem to switch from the more controlled banking sector into still less controlled parts of financial markets, and from financial markets to other sectors. These new sectors include electronic payments, trade and real estate. The paper shows how one can empirically approach the latter two by using economic information of unusual prices and other characteristics in order to identify the amount of laundering in these sectors. Combining economic information with criminological data facilitates the development of a new tool for identifying money laundering in some important sectors.

Introduction

Money laundering-bringing illicit proceeds from drugs, fraud and other crime, back into the legal economy-became a crime only in the late 1980s. The originator and most prominent supporter of this new policy was the United States, which switched from an unsuccessful anti-drug policy to an anti-money laundering policy [18, 34].

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Many regulatory efforts have been made since to bring this issue onto the international agenda [32]. Today, the Financial Action Task Force (FATF), an intergovernmental body established by the G-7 in 1989, sets the international anti-money laundering policy standards with which countries have to comply if they do not want to risk being blacklisted with serious negative economic consequences. The private sector, mainly the financial sector but progressively also other sectors, is obliged to apply rules for customer due diligence and to report suspicious activities or transactions of their (potential) clients to the authorities. Many actors became involved globally in this new policy field and they have all been confronted with costs of compliance.

This means that the accountability of money laundering regulation[1] will become more important. Was this anti money laundering policy successful and worth its money? Could the war on drugs and crime be won by changing it into a war on the proceeds of crime?

The paper argues that the major effect of anti money laundering policy so far is substitution that takes place within the financial sector and between sectors. Financial sector money laundering is substituted by using the still uncontrolled parts of the financial sector and by finding new forms of laundering in other sectors. Laundered money seems to move like water, which always finds its way through stones and other hindrances.

Section "Regulatory Efforts to Reduce Money Laundering and Crime" describes the regulatory efforts that have been undertaken globally to reduce money laundering and crime. Section "The Trend in the Proceeds of Crime" discusses the trend in the proceeds of crime and argues that both drugs and proceeds of crime have not diminished systematically. So, money must still be laundered somewhere. Section "New ways of money laundering and some empirical evidence" identifies new forms of laundering money and ways of measuring them. Specifically, it discusses the changed role of the financial sector for laundering which might have induced a substitution of laundered money by using different laundering techniques. It explores these potential alternative ways of laundering money and shows how one could empirically measure some of them. The paper concludes with urging better data in order to prove the substitution effect empirically and warns from wanting to abandon money laundering completely.

Regulatory efforts to reduce money laundering and crime

Money laundering regulation was mainly the result of a failed US war on drugs, which under the Clinton regime turned into a fight to reclaim the proceeds of crime. Drug abuse had been criminalized in the US in 1922 without much effect on drug production and consumption. If drug dealers and eventually other criminals could not be identified and prosecuted directly, then at least they should be discouraged by the realization that they could not reap the monetary benefits of their acts (see [18, 34]). So, in 1986 (Title 18, US Code Sec. 1956), money laundering was criminalized

[1] See den Hertog [17] p.35ff for theories of regulation and the trade off between independence and accountability of regulation.

in the US with penalties of up to 20 years in prison and $500,000 in fines. Further legal arrangements were made that permitted seizing, freezing and confiscation of assets by the authorities.

At a global level, anti-money laundering policy started in the late 1980s with the UN Convention on Drug and Narcotics of 1988 [39]. As aforementioned, in 1989, the FATF, an intergovernmental body to combat money laundering, was established by the G-7 countries. Since then there has been a steady move against money laundering globally. This increased in the late 1990s and accelerated since the terrorist attacks of September 11, 2001. Getting hold of terrorists by combating the financing of terrorism became part of the anti-money laundering policy. Today there are forty anti-money laundering recommendations and nine combating terrorist financing recommendations published by the FATF, with which countries have to comply. They face regular mutual evaluations and in case of non-compliance with the recommendations, they can get blacklisted as non-cooperative countries (see [35]). The FATF herewith sets the international standards with which countries have to comply by transferring these standards into national law. They have to adapt their administration, law enforcement, and execution to combat money laundering and terrorism. Lawyers in ministries, policemen, public prosecutors, and judges are all involved in this fight against money laundering. Special organizations, like the Financial Intelligence Unit (FIU), have been established as anti-money laundering units in each country as a result.

While FATF recommendations are 'soft' law and are hence not legally enforceable, in the European Union parts of them, in particular the reporting of suspicious transactions by the private sector, have become 'hard' law for all 27 EU member countries. The first EU Directive 'for the prevention of the use of the financial system for the purpose of money laundering' (91/308/EEC) included an identification and a reporting duty of suspicious financial transactions for financial institutions. The second EU Directive (2001/97/EC) on money laundering extended the reporting obligation beyond financial services to other economic sectors. The third and most recent EU Directive on money laundering (2005/60/EC) broadened the definition of money laundering by including terrorist financing. By December 2007, EU member states had to introduce plans to implement ongoing customer due diligence (CDD), identify non-domestic politically exposed persons (PEPs) and ascertain beneficial ownership of offshore accounts. Banks, real estate agents, notaries public, and traders in large values are obliged to screen their clients and to identify persons, activities or transactions suspected of money laundering or terrorist financing among their clients. The FIU collects their suspicious transaction reports. Supervisory authorities are involved in ensuring the compliance of banks and other sectors with the anti money laundering regime. Some countries, like the US, have high sanctions for not reporting, including a fine as great as $250,000 or 5 years imprisonment [19].

To sum up, a lot of efforts by the government and consequently also by the private sector—in particular by the financial sector-have been undertaken to fight crime through combating the proceeds of crime. Since the inclusion of terrorist financing into the anti-money laundering laws, anti-money laundering policy has become an international policy priority. It has developed into a matter of international safety and security, which means that it overrules most other national laws. Anti-money laundering policy has turned from fighting Al Capone to fighting

Al Qaeda (see [34]). The logical question to be raised is whether all these efforts have had the intended effect.

The trend in the proceeds of crime

Did the proceeds of crime or crime itself go down since the introduction of anti-money laundering policy in the late 1980s? As the following section will show, answering this still requires some puzzle work. One must first see which proceeds of crime are targeted by anti money laundering policy (see "Predicate Offences for Money Laundering"), then attempt to quantify the volume of these predicate crimes (2.2) and next find adequate prices to arrive at the proceeds of crime (2.3) which can be potentially laundered and their development over time, in order to find out whether money laundering has truly declined (2.4). As will become clear, section "The Proceeds of Crime" will focus mostly on data on drug trafficking to determine trends in the proceeds of crime. Section "Money Laundering" explores other ways to approach money laundering in a broader sense.

Predicate offences for money laundering

Defining money laundering relates to the so-called 'predicate offences', which generate the proceeds that make laundering necessary. Hiding or disguising the source of certain proceeds will of course, not amount to money laundering unless these proceeds were obtained from criminal activity [7]. The United States has developed a 130+ list of predicate crimes for money laundering.

Originally, mainly crimes with regard to drugs were included on the list; eventually fraud, counterfeiting, fencing, and illegal work were added and after 09/11 terrorist financing was added as well.

To what extent tax evasion is part of money laundering is still an unresolved issue in this debate. Tax evasion does not qualify as a predicate crime on the US 130+ list. Only failure to pay U.S. taxes on the proceeds of a crime, or a mix of criminal and non-criminal proceeds, is a money laundering crime in the US. A person who just cheats the government by not paying taxes from legal income cannot be prosecuted for money laundering.[2]

Nor does the EU include tax evasion in its definition of money laundering. This omits a large aspect of international criminal financial behavior. For example, Reuter and Truman [23] deeply regret that tax evasion is not included in the US money

[2] Though tax evasion is not on the 130+ list of predicate crimes under the US Code 1956 (a) (1) A (ii) in order for the financial transaction of funds derived from specified unlawful activities to count as money laundering the accused should have undertaken the respective activity with the intention to commit tax evasion. According to the legislative history of the amendment (134 Cong. Rec. S17367 (daily ed. November 10, 1988)): "Under this provision any person who conducts a financial transaction that in whole or in part involves property derived from unlawful activity, intending to engage in conduct that constitutes a violation of the tax laws, would be guilty of a money laundering offense."So tax evasion (=in this case evasion of payment of taxes on criminal profits of unlawful profits or mix of unlawful and lawful profits) together with fraud and false statements is a basic crime under that provision for money laundering prosecution (see http://www.usdoj.gov/tax/readingroom/2001ctm/25ctax.htm) (see the interpretation of M. Busuoic in [30])

laundering definition. They show that income from tax evasion is by far the largest part of criminal income (quoted in [21]). It amounts to about 4 to 6% of GDP. Estimates from Schneider and Enste [25], and Schneider [24] on the development of the shadow economy indicate that tax evasion has increased over time.

In the following we will leave out tax evasion, then, and instead concentrate on the two most important predicate crimes: fraud and drugs.

Quantifying predicate crimes

Walker and Unger [44] see fraud as the predicate crime which produces the highest criminal proceeds. As for tax evasion there are only sporadic estimates of fraud from individual countries and for particular sorts of fraud (such as credit card fraud, value added tax fraud). Fraud seems to rise over time at least with respect to identity fraud and company fraud (see 30, 31). For criticism of the data see Thoumi [29] and the works of Reuter, who in particular heavily criticizes the interpretation of fraud survey data [21, 23].

The lack of data makes a serious empirical comparison of fraud impossible at the time being. However so far there exist no signs that fraud has decreased in previous years. This means that we can safely exclude this factor in our efforts to determine if anti-money laundering policy has been successful.

The development of drug cultivation of opium and cocaine is meticulously monitored by the United Nations Office on Drugs and Crime (UNODC) (see diverse annual reports). Opium cultivation is watched by satellite, opium fields are zoomed in with programs like Google Earth, and the average production per square meter or acre is calculated depending on the quality of the harvest. There are also drug consumption data from treatment statistics and drug seizure data which allow for the estimation of other drugs as well, however with less reliability.

As Fig. 2 shows, the manufacturing of cocaine, the drug which today poses the greatest drug problem for the US population, has not decreased since 1995. A more favorable result could be reached with regard to the most dangerous drug, opium, which can be processed into heroin. Opium cultivation has decreased since 2007, where it was 9,000 metric tons, quite significantly. However, with 7,800 metric tons production is still higher than its long run average of 5,000 metric tons.

According to the UNODC [41] the production of other drugs, like amphetamines, ecstasy, marijuana and hashish all have increased since the mid 1980s. In addition, the quality and purity of some of the softer drugs has increased so much that health problems (like psychosis from long term hashish consumption) also increased. Overall, drug production and the proceeds of drugs do not seem to have declined since the mid 1980s. There was, however, a substitution from hard drugs with softer drugs production, in particular since 2007. So, if anti-money laundering policy has had a positive effect on crime, then at its best it has led to a reduction of hard drugs at the expense of increasingly intense soft drugs.

The proceeds of crime

In the following, we will look mainly at proceeds from drugs since other crime-related data are largely missing or as shown above, contested. In addition, the

original crime associated with money laundering was drug trafficking. Did anti-money laundering policy lead to a decline in the volume of drug production or consumption, or did it lead to a decrease in profits of the narcotic business?

The volume of drugs produced can be sold at the market price.[3] The proceeds of crime are hence the sales volume times the sales price. Reuter and Truman [23] show how sensitive drug proceed estimates are to where the drug is sold. Between the price that the Afghani peasant producer gets and the price that the US consumer finally pays are thousands of percentages of mark-up along the drug route. Seizures along this route indicate that there are 'leakages', i.e. the drug gets partly sold along this route. Anthony and Fries [1] follow the cocaine path to market and show that 1 g pure cocaine left the Columbian coca-farm for ten cents and cost $130 US dollars on American streets in the late 1990s.

In 2005, the UNODC estimated the size of the global illicit drugs market at the retail level at $322 billion or 1% of world GDP. North America and Europe were identified as the largest drugs market accounting for 44% and 33% respectively of the global market. The largest drugs sales were related to cannabis, followed by cocaine and the opiates (Fig. 1). The UNODC has a good overview over the size and value of the heroin and cocaine markets. With regard to the cannabis and synthetic drugs market, more uncertainty exists, as these are harder to detect. A UNODC study on illicit capital flows resulting from transnational organized crime gives an overview of the existing estimates and models used in estimating proceeds of crime. There seem to be indications that the cannabis market today is smaller than estimated by the model of 2003, while the synthetic drugs market has increased. The value of the global illicit drug market in 2010 is estimated to lie between $200 and $400 billion [41]. If the value of the drugs market did not change over the last 7 years, hence remaining at $322 billion then the percentage of drugs in GDP would have fallen. With this, the anti-money laundering authorities could register some success. However the range of the estimates given is still too large to conclude even the sign of the trend in total drugs proceeds.

If we focus on the better researched aspects of the drugs market, the opium/heroin and the cocaine market, then some interesting results can be seen.

If we multiply the cultivated cocaine with the US inflation adjusted cocaine retail sale gram price, we find that these 'proceeds' of cocaine have not declined[4] (see Fig. 2 below). A reduction in cocaine manufacturing (or an increase in cocaine seizure) is usually offset by higher cocaine prices, with the result that the proceeds of cocaine are very stable over time. However, for the other hard drug, opium, cultivation has decreased over the last 2 years (though it has not gone down over the whole period). Heroin is produced from opium, and if the relation between opium cultivation and heroin proceeds stayed similar in the last 2 years to levels over the whole period, then

[3] The drugs seized by the authorities have to be deducted if one assumes that authorities destroy the drug and do not resell it on the market, which is true for some countries, but unfortunately not for others. In the following we neglect seizures, though there might be an increase of seizures due to a more intense anti drug policy.

[4] This number definitely overestimates the worldwide proceeds of cocaine, since not all cocaine is sold in the US but perhaps in cheaper location and perhaps in bigger quantities. But under the assumption that drug prices in other countries stayed on average in a constant relation to the US cocaine price, the trend in the proceeds of cocaine would still be correct.

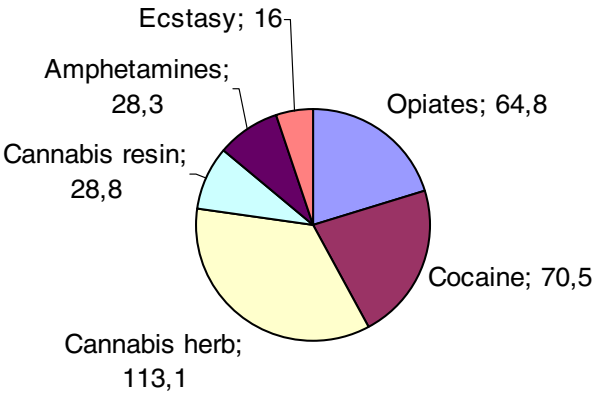


Fig. 1 The value of the global illicit drug market. UNODC [40] World Drugs Report Vol. 1, p.127

heroin proceeds will have decreased (as did opium cultivation). Compared to the 1990s this could be viewed as a success of anti-money laundering policy.

There also seems to be substitution from hard drugs to softer drugs, since the total value of the global drugs market has not decreased.[5]

Money laundering

If crime did not substantially decline, and if the proceeds of crime did not decline much and at best slightly in percent of GDP, did money laundering itself decline? Or do criminals have fewer profits from their drugs sales and other proceeds of crime due to higher costs of laundering or the increasing confiscation of assets? One possibility for this would be that criminals afraid of being caught by this new policy start to build up their own underworld, which can be financed by criminal money without having to launder it. A black economy paid for by criminal money, with schools and universities run by criminals for criminals, with criminal food stores, criminal tailors and with car dealers for criminals. In the following, we will assume that there is no such (or only a negligible) underworld effect and that the need for laundering did not decline in the last 30 years.

It is surprising how little effort has been undertaken so far to find out whether money laundering declined. Estimates of the proceeds of crime and money laundering are rare (for a survey see 30, 31; at the moment, January 2011, the UN, the US government and the IMF are busy with this subject and updating this). However these estimates are also highly contested: Thoumi [29], Reuter and Greenfield [22], Reuter and Truman [23], Levi and Reuter [21] are some of the most outspoken critics of measurements done so far.

Notwithstanding all criticism, some efforts have been made to quantify global money laundering. Prominent among these is the 1998 statement by then-Director of the International Monetary Fund (IMF) Michel Camdessus [8], that "2 to 5% of global [gross domestic product] would probably be a consensus range". Though intense internal inquiry within the IMF never could clarify the source of this estimate

[5] This is also called the 'balloon effect', see R. Seccombe [27], Squeezing the balloon: international drugs policy, Drug and Alcohol Review, 311–316.

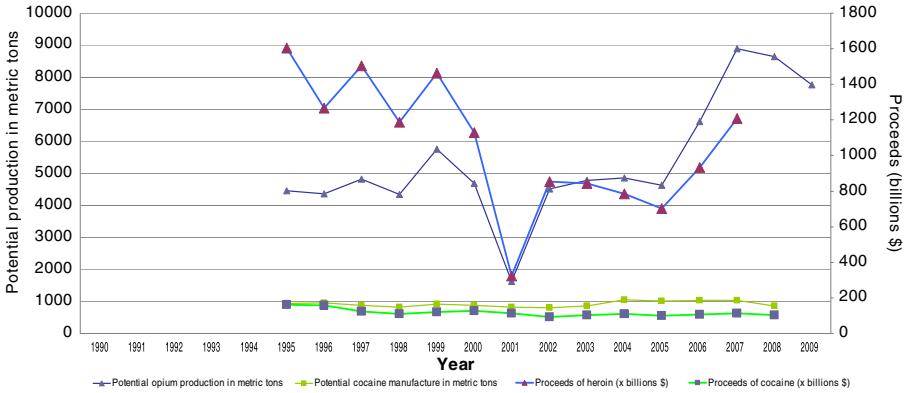


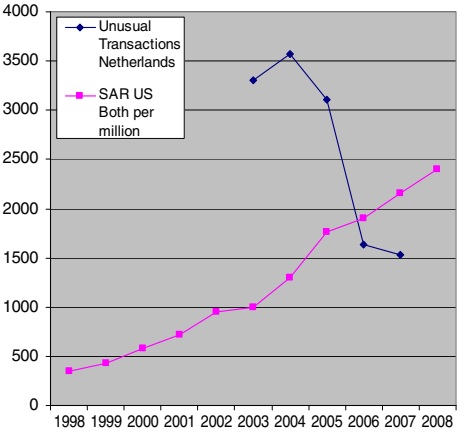
Fig. 2 Potential production and proceeds of heroin and cocaine. UNODC (several years). Data for heroin proceeds are not corrected for loss during processing. For a more detailed analysis see Unger (2012)

[44], it became a point of reference. So, money laundering is supposed to amount to about 5% of GDP according to the IMF and the Walker gravity model [42], to more according to Schneider 2000, [25] and Argentiero et al. [2] and to much less according to Reuter and Truman [23] who think that measuring is of no use anyway (for a survey see [30–32]). Most of the studies refer to only one point in time and require updating (see e.g. approaches by [30, 31, 42, 44]).

One idea would be to take the trend in Suspicious Activity Reports or Unusual Transaction Reports in order to examine whether money laundering has increased. More reports indicating more laundering could then either mean that there is more laundering or that laundering activities have been taken more seriously by the private sector. This means that more reports should be seen as a positive contribution to combating laundering. But as Takats [28] warned, more reports could just mean that the private sector, afraid of being fined, starts reporting more and more thus diluting information rather than providing additional insight to the authorities. Unger and van Waarden [38] showed that it is even not clear whether more or less reporting indicated an improvement of anti-money laundering policy. After the introduction of the risk-based approach in 2005, US reporting increased dramatically while Dutch reporting declined drastically (see Fig. 3 below). The reason they give is that the Dutch authorities have developed the risk-based approach in a consensual way together with business and have very low fines for not reporting, which are also rarely executed. Hence the Dutch private sector has an incentive to only provide 'true' money laundering cases. So information reported to the FIU gets scarcer but qualitatively better, while US reporting frequency increases but becomes qualitatively worse. From this example, we can conclude that it will not be possible to analyze whether money laundering increased with the help of suspicious activity reports.

If one finds a trend in laundering over time it is almost always country specific. Italian authors tried to measure the trend in laundering for Italy and Fig. 4 below shows the different outcomes of studies for Italy. Money laundering either fluctuates around a trend [9] or increases [2].

Busato et al. [6] estimated money laundering for the US and EU-15 countries (see Fig. 5 below). They simulate laundering in a dynamic two-sector model, with a legal and a criminal sector. People make rational choices of how much work they want to



Source: Unger and Van Waarden [38]

Fig. 3 Reporting of suspicious activities in the US and in the Netherlands. Unger and Van Waarden [38]

do in the legal and the criminal sector, accounting for the fact that they can be sanctioned for the latter. With the help of observable data on the legal economy the authors can check the forecasting quality of their model for the legal sector and predict the unobservable criminal sector. As Fig. 5 shows, according to their findings, money laundering increases in the US steadily from 18.5% to 19.5% of GDP over time and decreases in Europe only very little from 18.5% to 18% of GDP. Note that the model specification includes parts of the shadow economy and not only money laundering according to our definition, thus explaining the high numbers.

To sum up, the increased efforts of anti-money laundering policy were accompanied by a slight reduction in hard drugs (such as heroin) at the expense of an increase in softer drugs of higher quality and potency. And it led to almost no visible decrease in the proceeds of crime. There must hence be still a lot of criminal money somewhere, but where?

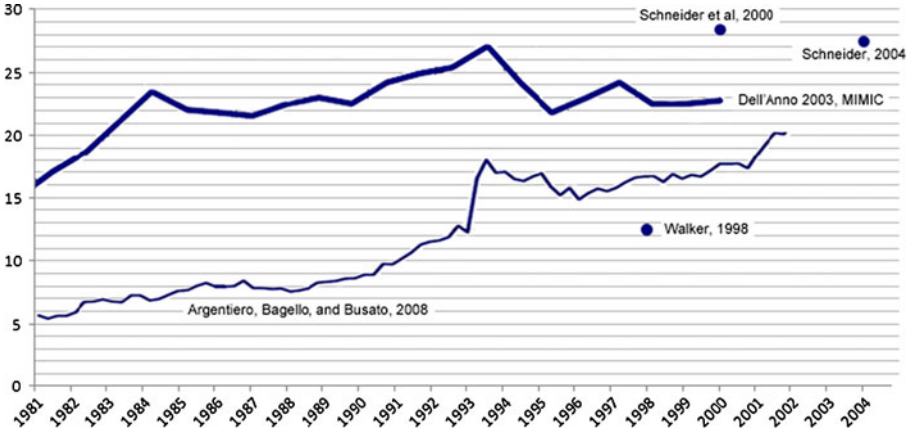
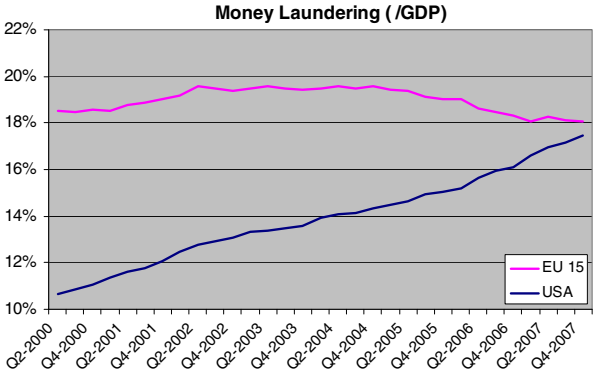


Fig. 4 Money laundering measurements in Italy. Unger [32] from [2, 9]. Schneider and Enste [25] and Schneider [24], Walker [43]



Source: Busato, Bagella and Argentiero [6]

Fig. 5 Money laundering development in the EU-15 and the US

New ways of money laundering and some empirical evidence

The changed role of the financial sector for laundering

The major concern of anti-money laundering policy was laundering through the financial sector. As a consequence, the financial sector became more regulated and controlled, had to report suspicious transactions, and became increasingly aware of money laundering issues. Know your customer/CDD-rules make it much more difficult nowadays for a criminal to bring a suitcase full of cash to a bank than 20 years ago.

Most of the anti-money laundering regulations so far concern the banking sector. Although some countries still compete for criminal money and might be less strict in applying the anti-money laundering (AML) laws than others [14, 37], the banking sector has become less attractive for launderers. At the very least, laundering costs might have increased and therefore have a deterrence effect for laundering in the banking sector.

However, financial regulation does not encompass the whole financial sector. Since the liberalization of capital markets in the 1980s, higher incomes were created and finance 'took off' by becoming a world of its own with six times more financial assets in relation to GDP than in the 1980s (see [33]). This necessitated a search for new investments in which to place the large amounts of new liquidity. In the last 30 years many new investments and new markets for these investments have been created, partly located within traditional banks as 'shadow banks' (e.g. a real estate investment department within a traditional European bank). Some of these new investment possibilities were largely uncontrolled, like the private equity market and the derivative market. Only during the latest financial crisis did we hear about shadow banks and asset constructions, which allowed banks' financial investment possibilities to extend far outside their traditional banking business.[6] Asset backed securities and securitization, derivatives and over the counter derivatives, hedge funds, venture capital and private equity funds, were some of these prominent

[6] The traditional bank business consists of providing liquidity and of transforming risks and terms between savers and investors

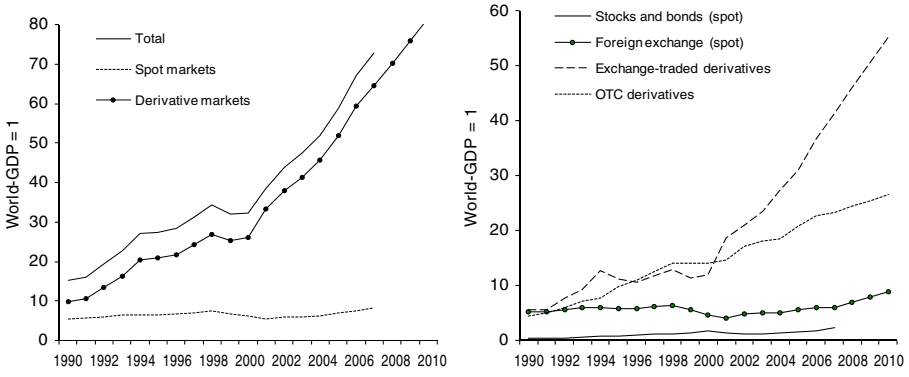
financial innovations. They offered large profits and were not (fully) under central bank supervision and were (largely) out of government control.

Figure 6 below depicts and highlights the sheer magnitude of one of the major financial innovations in this time period, namely derivatives. Trading in derivatives markets has expanded significantly more than trading in spot markets. Globally, the trading volume of derivatives is roughly 66 times higher than world GDP, whereas spot trading amounts to "only" 8 times world GDP [26]. The largest market for derivatives is the over-the-counter (OTC) market. OTC derivatives are contracts that are traded (and privately negotiated) directly between two parties, without going through an exchange or other intermediary. Products such as swaps, forward rate agreements and exotic options are almost always traded in this way. The OTC derivative market is largely unregulated with respect to disclosure of information between the parties, since the OTC market is made up of banks and other highly sophisticated parties, such as hedge funds. Reporting of OTC amounts is difficult because trades can occur in private, without activity being visible on any exchange. According to the Bank for International Settlements, the total outstanding notional amount is US $ 582 trillion (as of June 2010, see [3], Table 19).

Alternative investments offered a large variety of possibilities for investors to recuperate large profits, partly with the possibility to stay anonymous. Why should law abiding citizens also profit from this outstanding possibility to make high profits without taking the risk of getting caught?

The financial crisis also revealed that criminals made use of the liquidity squeeze that resulted from banks' distrust of interbank lending. Criminals introduced additional cash and herewith helped the dried out banking sector (and themselves). The head of the UN's Office on Drugs and Crime, Antonio Maria Costa, generated some headlines in early 2009 when he made claims about the importance of illicit funds in sustaining liquidity in the face of the financial crisis (AML-CFT [4]). According to him several hundred billion US dollars had been introduced into the financial system by the mafia. The Bank of Italy early in 2010 also made claims regarding increased mafia involvement in lending as bank loans dried up, based on evidence provided by the Central Bank's FIU of a sharp increase in suspicious financial transactions [5]

The global financial crisis has generated political pressures for more regulation of the banking sector, but it has also offered new ways of laundering funds. If global



Source: Schulmeister [26]

Fig. 6 The development of the largely uncontrolled derivative market

crime—drugs and fraud—has not declined or even increased (see "The Trend in the Proceeds of Crime"), and if the banking sector becomes more intensely controlled, it is likely that the proceeds of crime will find new ways of circulating across countries. The expansion of regulation from banking to other sectors like real estate and traders of large values illustrates that money so far always found its way by exploring new sectors which then had yet to be regulated (see "Regulatory Efforts to Reduce Money Laundering and Crime"). This regulation pattern is to be found in many regulatory fields where the discovery of previously unknown facts led to an expansion of regulation. Deregulation follows regulation, both in practice and in theory (see [16] for an overview of theories). Criminals switch from one sector to another. Money laundering can take many forms. Al Capone used launderettes for disguising illegal alcohol revenues during prohibition in the US. Launderettes, a flourishing cash intensive business in the 1930s, were an ideal location to slip the money from illegal alcohol sales into the cash register. There are many new forms and techniques of money laundering which offer increasing possibilities to launder money outside the financial sector.

Electronic payment forms money laundering

These new forms of laundering include prepaid virtual gold currencies, ATM cards, mobile phone payments, and Internet-based payment systems (see [20, 45]). Virtual gold currencies (e.g., e-gold, Goldmoney, e-Bullion, AnonymousGold) are account-based electronic payment systems whose value is backed by 100%-golden deposits in a private storage of the system provider who often operates from an offshore country (e.g., e-gold Ltd., Nevis Corporation). In the case of gold currencies, only certain weights of gold are booked to the accounts of receivers. While the possession of gold reserves changes constantly, the gold in the treasury vault remains untouched. For exchange or purchase of gold currencies, the user opens an account for a virtual gold currency at a system provider. The identification requirements are negligible in comparison to opening a bank account and are often limited only to a request for information such as name, email address and occasionally physical address to which then a "verification code" is sent (see [45]).

Criminals can purchase legitimate prepaid automated teller machine (ATM) cards or smart cards, deposit their dirty money onto the card, and then withdraw the newly-cleaned funds from any ATM anywhere in the world. Mobile phone payments, an especially popular method for making transactions in the Middle East, provide money launderers an opportunity to evade AML bodies. In addition, electronic payment transfers such as Eurobonds [15] eCash or Digital Cash [10, 20] can conceal the money's origins and keep owners anonymous even when they reside in a very traceable environment, the internet. Trade-based money laundering and laundering through the real estate sector have both become more popular. For these new forms of laundering, which often take place outside the financial sector, little empirical work has been done on a larger, global scale.

So far, no empirical estimates of the amounts of electronic money laundering have been made. Models of how to evaluate it are still missing. More promising developments in estimating other new forms of laundering will be described in the next two subsections.

Trade based money laundering

One of the oldest techniques to circumvent government scrutiny might become increasingly popular again today: using international trade to move money, undetected, from one country to another, by means of fake invoicing or falsely declared merchandise [46].

Launderers can, for example, create fake invoices for high amounts and ship merchandise of low value or reverse this procedure as a way of concealing ill-gotten gains. These techniques have recently received attention under the heading of trade based money laundering. In June 2006, the FATF released the first comprehensive report on Trade-Based Money Laundering which stated that "The international trade system is clearly subject to a wide range of risks and vulnerabilities that can be exploited by criminal organizations and terrorist financiers" [11]. In June 2008 the FATF published the best practices of Trade-Based Money Laundering.

How can one detect trade based money laundering? Economic analysis of trade data can help to develop risk indicators for identifying suspicious trading countries, suspicious merchandise and for determining the scale of trade based money laundering.

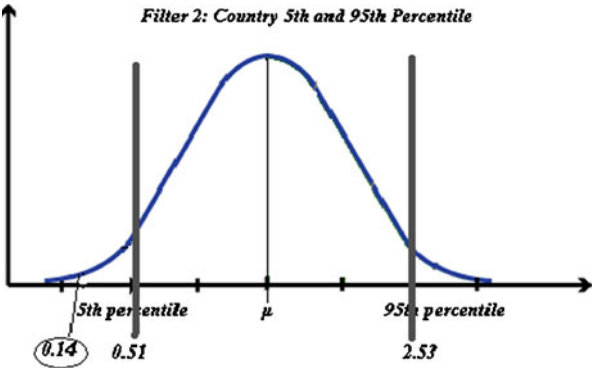
Zdanowicz [46] analyzed monthly data contained in the United States Merchandise Trade Database. This database is produced by the United States Department of Commerce, Bureau of Census and is used to determine the United States' balance of trade. He identified suspicious merchandise, the share of trade suspect to money laundering for each country, and the amount of money laundering between the US and countries on the Al Qaeda watch list. He estimated the money moved out of the US through overvalued import prices or undervalued export prices to amount to $189 billion in 2006, as opposed to $167 billion in 2004 (see [46], Ch 4.2)

Zdanowicz's method is valid under the assumption that product prices (and product weights) are normally distributed and that unusual prices have a criminal intention and are not, for example, just a booking error by customs. Figure 7 shows a product, say ketchup, which at an import price of $0.14 lies below the margins of this country's usual ketchup prices, which are $0.51 cents and $2.51 cents. All transactions with a price below the 5% margin or above the 95% margin are classified as trade-based money laundering. Zdanowicz uses not only country prices, but also world prices and variance measures to determine unusual transactions.

A still unresolved weakness of the model is that no matter how great the price fluctuations are, 10% of all transactions are always classified as suspicious (the upper and lower 5%). If for example the ketchup price fluctuation presented in Fig. 7 is drastically reduced (e.g. because of less trade based money laundering in ketchup), so that the bell shape becomes narrower, with the new margins lying between $1 and $2, then 10% of the transactions would still be counted as suspicious. Transactions, which under the old distribution were classified unsuspicious, would suddenly become suspicious, though the true reason might simply be attributed to a reduction in trade-based money laundering and not an increase[7]

Zdanowicz's method inspired Unger and Ferwerda [36] to expand it and to apply it to measuring money laundering in the real estate sector.

[7] I owe this point to Joras Ferwerda



Source: Unger [32]

Fig. 7 Unusual product price for identifying trade based money laundering

Money laundering in the real estate sector

The real estate sector is a prominent candidate for money laundering, particularly for the last phase of money laundering, parking the proceeds of crime permanently. The real estate sector consists of three sub-markets: the business sector (offices, shops, factory halls etc.), the private housing sector (first and second hand houses and apartments etc.), and the public sector (government buildings, prisons etc.). Real estate objects can be used in two ways for criminal purposes. They can be traded in order to hide the origin of illicit funds in a non-transparent and speculative market, or they can be used as a final investment, where criminals park their money in business or houses permanently. Money laundered through these final investments can either be used to create legal income (e.g. rent) or for doing criminal business (e.g. an ecstasy lab).

In the Netherlands, criminologists have studied the real estate sector very carefully. For a small open economy, the danger of criminals settling down and occupying whole streets and districts became a visible reality when several drug barons were shot in the city of Amsterdam in 2000. Given the importance of the real estate sector, several studies on criminal behavior in the real estate sector have been carried out. Most prominent is the study of the Dutch Ministry of Justice's research center WODC, by Ferwerda et al. [12], which gives a good overview of maleficent behavior in the Dutch real estate sector, and the Financial Expertise Center (FEC) report of [13] on money laundering techniques.

Unger and Ferwerda [36] used these findings about money laundering techniques in real estate and the behavior of criminals in the real estate sector and combined this information with economic data on unusual developments of economic variables.

First, following Zdanowicz's idea of using unusual prices for identifying suspicious objects, Unger and Ferwerda used studies on unusual housing price movements. However, one cannot separate purely speculative price movements-price increases from splitting of apartments or office spaces-from criminal price movements. Since speculation is inherent in this market and not necessarily illegal, the authors had to combine this information with other unusual criteria in order to filter out the criminal objects.

From the existing literature on criminal behavior and money laundering techniques in the real estate sector, Unger and Ferwerda derived 25 characteristics

of an object which were classified as 'unusual.' These were, for example, objects that somebody sold to herself; or houses without a mortgage though interest rates on mortgage are tax deductable in the Netherlands; foreign ownership; foreign financed constructions; a home value which did not correspond to the income of the person; a newly established company which closed down very quickly again; etc.

Unger and Ferwerda had access to data from the Housing Registering Office (Kadaster), the Chamber of Commerce and the Tax Authority (Belastingdienst), in order to identify objects with unusual characteristics in two Dutch cities, Utrecht and Maastricht. Data availability forced the authors to reduce the study to 17 measurable characteristics. They then looked how many of these 17 unusual characteristics each object had. For each characteristic they gave a 'red flag'. The more 'red flags' an object received, the more unusual it was considered. One object received 9 flags, all other objects got less, and no object received all 17 flags. Unger and Ferwerda finally arrived at a list of 200 objects, which they passed on to criminologists for further analysis. The only information that the criminologists were given was that this list of 200 objects contained 50 objects that were not unusual and 150, which were unusual according to the economic data analysis. The criminologists were not told which objects were unusual, i.e. contained how many 'red flags' in order to treat all objects with equal attention.

As a second step (Part Two) the criminologists combined the object numbers with Housing Registering Office data in order to find out which persons stood behind these 200 objects. They then used criminological data to check whether the unusual objects belonged to persons with criminal records. For this they had access to Ministry of Justice and police data. They also checked whether there were suspect persons, which the top down indicator approach had missed. In Part Three Unger and Ferwerda [36] combined the economic and criminological experiences and analyzed which characteristics of an object (unusual purchasing sum, foreign ownership, no mortgage, etc.) are useful indicators for identifying conspicuous objects and their owners' suspect of money laundering.

The identified money laundering objects times the housing price of the objects gives the amount of money laundered in the real estate sector. If one calculates the volume identified (150 objects) with the average Dutch housing price of 200,000 Euros, then the identified money laundering is small (30 million Euros) compared to the expected volume of money laundered in this sector in the Netherlands (3–6 billion Euros) [30, 31]. However, the study comprises only two middle sized Dutch cities and not the whole Netherlands. In addition, the method can only identify objects which left a paper trail. Laundering constructions without a paper trail (e.g. buying a house with a large amount of cash money and using the notary public as a facilitator, and registering at a modestly higher or lower housing price in the books, would stay unnoticed).

Conclusions

Both crime and laundering of the proceeds of crime seem to be very flexible. A prodigious lack of data makes it difficult to come to decisive conclusions. But the paper showed that many indicators point at the fact that substitution seems to be the major effect of anti-drug and anti-money laundering policy. Hard drugs (such as heroin) get substituted by softer drugs, which increase in intensity (marijuana) while synthetic drugs

replace traditional drugs. Money laundering switches from the traditional banking sector to the less regulated derivative market and to other sectors. Among these, electronic payments such as buying gold via the internet or by loadable phone cards are increasing. Also, money laundering by fake invoicing of exports and imports and other forms of trade based money laundering offer a substitute for launderers. The real estate sector is another lucrative way for launderers to hide their illicit gotten proceeds and expand their criminal business. Measurement and detection of money laundering face new challenges with these new ways of laundering. The method proposed in this paper uses unusual movements of economic variables in combination with other characteristics of a person, transaction or an object in order to identify money laundering in a sector. Using econometric and statistical logit and probit analysis, one can also calculate the probability with which a certain object is a money laundering object. With this, the method proposed can be an important tool for the executive. But for measuring substitution effects between sectors, the amount of laundering per sector must be arrived at using long term series, which will not be available for some time Money waiting to be laundered, like water, will always find its way, but the way will become more costly and cumbersome. Eradicating money laundering altogether, like eradicating crime, is impossible since the costs of establishing a zero crime or zero laundering system would be far too high in a democracy. Only dictatorships have reached such a result so far. However, although we do not call for zero money laundering, we would definitely be happy if we could better understand the process from combined research efforts, and to find out whether money laundering increases or declines after all.

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